

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Kevin J. KAYSER
John J. KILBANE II

Title: METHOD FOR METABOLIZING CARBAZOLE
IN PETROLEUM

Express Mail No.: EL649158460US

Date of Deposit: 09 September 2003

INFORMATION DISCLOSURE STATEMENT

Mail Stop PATENT APPLICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

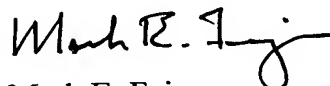
In accordance with Rules 1.56 and 1.98, References AR-AT listed on Sheet 1 and AR-AS listed on Sheet 2 of Form PTO-1449 are cited and discussed on Pages 4, 5 and 11 of the referenced patent application and are brought to the attention of the Examiner as being possibly material to examination of this application.

The remaining references listed on Form PTO-1449 are also brought to the attention of the Examiner as being possibly material to examination of this application.

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Form PTO-1449 (8 pages) is enclosed with a copy of each and every
reference cited on Form PTO-1449.

Respectfully submitted,



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FORM PTO-1449
(MODIFIED)U.S. DEPARTMENT OF COMMERCE
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ATTY. DOCKET NO.

GTI-1512

SERIAL NO.

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Kevin J. KAYSER et al.

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	AS		Nojiri, H. et al., "Diverse Oxygenations Catalyzed by Carbazole 1,9a-Dioxygenase from <i>Pseudomonas</i> sp. Strain CA10", <i>Journal of Bacteriology</i> , Vol. 181, No. 10, pp. 3105-3113, (May 1999)
	AT		Nojiri, H. et al., "Organization and Transcriptional Characterization of Catechol Degradation Genes Involved in Carbazole Degradation by <i>Pseudomonas resinovorans</i> Strain CA10", <i>Biosci. Biotechnol. Biochem.</i> , 66 (4), 897-901 (2002)

EXAMINER

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	AR		Kirimura, K. et al., "Selective and Continuous Degradation of Carbazole Contained in Petroleum Oil by Resting Cells of <i>Sphingomonas</i> sp. CDH-7", <i>Biosci. Biotechnol. Biochem.</i> , 63 (9), 1563-1568 (1999)
	AS		Habe, H. et al., " <i>Sphingomonas</i> sp. Strain KA1, Carrying a Carbazole Dioxygenase Gene Homologue, Degrades Chlorinated Dibenzo- <i>p</i> -dioxins in Soil", <i>FEMS Microbiology Letters</i> , 211 43-49 (2002)
	AT		Sato, S. et al., "Identification and Characterization of Genes Encoding Carbazole 1,9a-Dioxygenase in <i>Pseudomonas</i> sp. Strain CA10", <i>Journal of Bacteriology</i> , Vol. 179, No. 15, pp. 4850-4858, (August 1997)

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	AR	Shotbolt-Brown, J. et al., "Isolation and Description of Carbazole-Degrading Bacteria", <i>Can. J. Microbiol.</i> , 42 79-82 (1996)					
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	AT	Ouchiyama, N. et al., "Biodegradation of Carbazole by <i>Pseudomonas</i> spp. CA06 and CA10", <i>Biosci. Biotech. Biochem.</i> , 57 (3), 455-460 (1993)					
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	AR	Hisatsuka, K. et al., "Microbial Transformation of Carbazole to Anthranilic Acid by <i>Pseudomonas stutzeri</i> ", <i>Biosci. Biotech. Biochem.</i> , 58 (1), 213-214 (1994)					
	AS	Shao, Z. Q. et al., "Cloning and Expression of the s-Triazine Hydrolase Gene (<i>trzA</i>) from <i>Rhodococcus corallinus</i> and Development of <i>Rhodococcus</i> Recombinant Strains Capable of Dealkylating and Dechlorinating the Herbicide Atrazine", <i>Journal of Bacteriology</i> , Vol. 177, No. 20, pp. 5748-5755 (October 1995)					
	AT	Loh, K. et al., "Kinetics of Carbazole Degradation by <i>Pseudomonas putida</i> in Presence of Sodium Salicylate", <i>Wat. Res.</i> , Vol. 34, No. 17, pp. 4131-4138 (2000)					
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	AR		Trott, S. et al., "Cloning and Heterologous Expression of an Enantioselective Amidase from <i>Rhodococcus erythropolis</i> Strain MP50", <i>Applied and Environmental Microbiology</i> , Vol. 68, No. 7, pp. 3279-3286 (July 2002)
	AS		Grosser, R. J. et al., "Indigenous and Enhanced Mineralization of Pyrene, Benzo[a]pyrene, and Carbazole in Soils", <i>Applied and Environmental Microbiology</i> , Vol. 57, No. 12, pp. 3462-3469 (December 1991)
	AT		Lasa, I. Et al., "Development of <i>Thermus-Escherichia</i> Shuttle Vectors and Their Use for Expression of the <i>Clostridium thermocellum celA</i> Gene in <i>Thermus thermophilus</i> ", <i>Journal of Bacteriology</i> , Vol. 174, No. 20, pp. 6424-6431 (October 1992)

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	AR	Aronstein, B. N. et al., "Biological and Integrated Chemical-Biological Treatment of PCB Congeners in Soil/Sediment-Containing Systems", <i>J. Chem. Tech. Biotechnol.</i> , 63 , 321-328 (1995)					
	AS	Kilbane II, J. J. et al., "Selective Removal of Nitrogen from Quinoline and Petroleum by <i>Pseudomonas ayucida</i> IGTN9m", <i>Applied Environmental Microbiology</i> , Vol. 66, No. 2, pp. 688-693 (February 2000)					
	AT	Nojiri, H. et al., "Genetic Characterization and Evolutionary Implications of a <i>car</i> Gene Cluster in the Carbazole Degradar <i>Pseudomonas</i> sp. Strain CA10", <i>Journal of Bacteriology</i> , Vol. 183, No. 12, pp. 3663-3679 (June 2001)					
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	AS	Watson, G. K. et al., "Microbial Metabolism of the Pyridine Ring - Metabolic Pathways of Pyridine Biodegradation by Soil Bacteria", <i>Biochem. J.</i> , 146 , 157-172 (1975)					
	AT	Furukawa, K. et al., "Cloning of a Gene Cluster Encoding Biphenyl and Chlorobiphenyl Degradation in <i>Pseudomonas pseudoalcaligenes</i> ", <i>Journal of Bacteriology</i> , Vol. 166, No. 2, pp. 392-398 (May 1986)					
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